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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/920,800	08/03/2001	Vincent Roy Page	839-1029	8215
30024	7590	04/19/2004		
NIXON & VANDERHYE P.C./G.E. 1100 N. GLEBE RD. SUITE 800 ARLINGTON, VA 22201				
			EXAMINER LANGEL, WAYNE A	
			ART UNIT 1754	PAPER NUMBER

DATE MAILED: 04/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.



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SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09920800

EXAMINER

ART UNIT	PAPER NUMBER
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DATE MAILED:

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☐ This application has been examined ☒ Responsive to communication filed on 2-10-04 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice of Draftsman's Patent Drawing Review, PTO-948. |
| 3. <input type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, PTO-152. |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-11 are pending in the application.

Of the above, claims _____ are withdrawn from consideration.

2. ☐ Claims _____ have been cancelled.

3. ☐ Claims _____ are allowed.

4. ☒ Claims 1-11 are rejected.

5. ☐ Claims _____ are objected to.

6. ☐ Claims _____ are subject to restriction or election requirement.

7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.

8. ☐ Formal drawings are required in response to this Office action.

9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).

10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).

11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).

12. ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.

13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

14. ☐ Other

EXAMINER'S ACTION

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --
(e) The invention was described in (1) an application for patent, published under Section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 8, 10 and 11 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cooper et al. (newly cited).
Cooper et al. disclose a method for removing nitrogen oxides from

a gas stream, comprising injecting an oxidizing stream of hydrogen peroxide into the flue gas stream so as to oxidize nitric oxide to nitrogen dioxide, with further oxidation to nitric acid. (See column 13, lines 24-33.) The reactions recited in applicant's claim 1 would inherently occur in the process of Cooper et al., since Cooper et al. disclose in the Abstract that the gas streams from which the nitrogen oxides are removed are stationary combustion sources, and would therefore contain oxygen which would participate in the reactions to the same extent as it would in the reactions recited in applicant's claim 1. Regarding claims 2, 4, 8, 10 and 11, Cooper et al. teach at column 8, lines 1-9 that the nitric acid may be reacted with alkaline material such as potassium hydroxide, and further disclose at column 8, lines 10-17 that the alkaline material may be in particulate form.

Claims 3, 6, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. as applied to claim 1 above, and further in view of Jones '298. It would be further obvious from Jones '298 to modify the process of Cooper et al. by introducing the hydrogen peroxide in aerosol form since Jones '298 discloses a method for removing oxides of nitrogen from combustion effluent gases by introducing a carrier gas and an injection chemical into a nozzle to be mixed together, and then

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ejecting the mixture from the nozzle into a flue gas duct to provide intimate mixing between the injection chemical and the nitrogen oxides containing combustion effluent gas. (See the Abstract and column 5, lines 18-62.) One of ordinary skill in the art would be motivated to do so, since one would appreciate that intimate mixing of the nitrogen oxides with the hydrogen peroxide would be beneficial in the process of Cooper et al. to provide for a faster reaction.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over DE 4216772 (newly cited). DE '772 discloses the purification of waste gas, wherein hydrogen peroxide is injected into the gas to oxidize nitric oxide to nitrogen dioxide and nitric acid. (See the English Abstract.) The reactions recited in applicant's claim 1 would inherently occur in the process of DE '772, since the reference discloses in the Abstract that the

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waste gas may be from an industrial combustion plant, which would contain oxygen that would participate in the reaction to no less extent than it would in the process recited in applicant's claim 1.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over DE '772 as applied to claim 1 above, and further in view of Jones '298. Jones '298 is relied upon as discussed hereinbefore. It would be obvious from Jones '298 to modify the process of DE '772 by introducing the hydrogen peroxide in aerosol form, since one of ordinary skill in the art would appreciate that intimate mixing between the nitrogen oxides and hydrogen peroxide would be beneficial to obtain a faster reaction.

Claims 2, 4, 8, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE '772 as applied to claim 1 above, and further in view of Cooper et al. It would be further obvious from Cooper et al. to add potassium hydroxide in particulate form to the effluent stream of DE '772 after contact with the hydrogen peroxide, since DE '772 discloses that the nitric acid should be reacted with an alkaline material (i.e. calcium hydroxide), and Cooper et al. establish the equivalence between particulate sodium hydroxide and particulate calcium hydroxide as an alkaline material for reacting with nitric acid

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at column 8, lines 1-17.)

Claims 6, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE '772 in view of Jones '298 as applied to claim 3 above, and further in view of Cooper et al. Cooper et al. is relied upon as discussed hereinbefore. It would be further obvious from Cooper et al. to substitute particulate potassium hydroxide for the calcium hydroxide reacted with the nitric acid in the process of DE '772.

Botton et al. is made of record for disclosing at column 4, lines 34-37 that the oxidation of nitrogen oxides by hydrogen peroxide has not been used on an industrial scale, since the techniques proposed led to a prohibitive consumption of hydrogen peroxide.

The other references are made of record for disclosing various methods for removing nitrogen oxides from gas streams by reacting with hydrogen peroxide.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wayne A. Langel whose telephone number is (571) 272-1353. The examiner can normally be reached on Monday through Friday from 8 A.M. to 3:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can

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be reached on (571) 272-1358. The fax phone number for this Group is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or public PAIR. Status information for unpublished applications is available through private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WAL:cdc

April 14, 2004

Wayne A. Langel
WAYNE A. LANGEL
PRIMARY EXAMINER